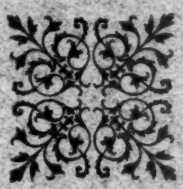
J. Tourner Smith
Western State - Kalamazoo

NOTES OF

THE ALL AMERICA
TRACK COACHING SCHOOL



LINCOLN, NEBRASKA

ALL AMERICA TRACK COACHING SCHOOL

JUNE 29 TO JULY 4, 1931

LINCOLN, NEBRASKA

At the Time of the A.A.U. Championships

Containing the talks and discussions of the following coaches:

Frank G. Anderson.....Texas A. & M. College
Wilbur Bohm.....Washington State College
Frank R. Castleman.....Ohio State College
"Dad" Butler.....University of Detroit
George Bresnahan.....University of Iowa
Lester Duke.....Grinnell College
Dean Cromwell....University of Southern California
Boyd Comstock.....Los Angeles Athletic Club
C. S. Edmundson.....University of Washington
S. W. Finger.....University of Minnesota
Ward Haylett.....Kansas State College
Nash Higgins.....University of Florida
Charles F. Hunter.....Olympic Club
Brutus Hamilton.....University of Kansas
Archie Hahn.....University of Virginia
"Pitch" Johnson.....Drake University
John Jacobs.....University of Oklahoma
Tom Keene.....Syracuse University
T. C. Kasper.....South Dakota State College
Roy Kenny.....Oklahoma A. & M. College
John J. McHugh.....New York City
T. N. Metcalf.....Iowa State College
L. W. Olds.....Michigan State Normal College
Joe Pipal.....Occidental College
Bob Simpson.....Iowa State College
Henry F. Schulte.....University of Nebraska
Charles Werner.....University of Illinois
Ralph H. Young.....Michigan State College

Athletes who demonstrated and helped in discussions:

Barney Berlinger....All Around
Kenneth Churchill.....Javelin
Ray Conger.....Running
Donald Gray.....Broad Jump
Bob Jones.....Discus
Harold Osborne.....High Jump
Hugh Rhea.....Shot
Frank Wykoff.....Sprints

Compiled and edited by J. C. Lewis, Ed Weir and Henry F. Schulte.

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TABLE OF CONTENTS

	Page
Frontispiece	1
Table of Contents	2
880-yard Run	3-5
Sprints	6-9
Cross Country	10-11
Cross Country Scoring	12
Two Mile Run	13
440-yard Run	14-16
Mile Run	17-21
Track and the Crowd	22-22a
Training	23
Organization of Track Meets	24
Relays	25
Low Hurdles	26-27
High Hurdles	28-30
440 Hurdles	31
High Jump	32-33
Training for the All Around	34
Broad Jump	35-37
Pole Vault	38-40
Javelin	41-43
Hammer	44
Discus	45-48
Pick Ups in Germany	49-50
Shot Put	51-53

880-YARD RUN

Coach "Heck" Edmundson, University of Washington:

"Half milers should start their work in the fall. Their first work should be about a mile and a half of running but allowing them to come to a walk a couple times for rest. From the first night have them practice a fast finish. The early training should not be too hard. The men should gain weight. The legs, lungs and heart all have to be built up. Any enlargement of the heard in slender men is not noticeable soon after they quit running. There is very little of this among athletes. Not good to stop training too suddenly.

"After two weeks of training have men run a mile or mile and a half, running the full distance with a sprint always at the finish. At about this period in the training a half miler should begin working on his start. The start builds up his speed and also helps his endurance. Now the work should be varied with quarter miles and sprints worked in with the regular running. "Heck" said that in his own coaching he always had the quarter as his last event in time trials so any milers and half milers who wished could run in it. A weight chart is an aid in telling the condition of your men. While no specific program will work with all of your men, this is the one used on most of the 880 men at Washington:

"Monday - a day of relaxation. Jog three quarters of a mile and sprint the finish.
Tuesday - a 2:10 half with a sprint the last 80 yards. This 2:10 applies to a 2-minute half miler. Slower or faster men would run accordingly.
Wednesday - a 660, running the first quarter exactly as he runs the first quarter of a half mile and the last 220 as he would run the last 220 of his half mile.
Thursday - "Monkey day." Do anything they want but the work must be easy.
Friday - No work.
Saturday - Time trial or meet.

"All half milers should know their pace and have a good finish. If their finish is poor they will have to learn to run the first quarter faster. A good finisher can let the other man set the pace and do most of the worrying in a race.

Running Form and Stride:

"Two types of Runners--
The first type, those who run with hips low, called "running in the saddle". Sometimes called "pullers".
The other type, those who run with the body angle ahead called "pushers". With this style the center of gravity is in front of the back leg. More power results from this style. The push directs the power of the drive along the center of the body. The leg is straight when you light on your front foot. A bent leg puts the strain on the muscles instead of the bones. There is an instant when the runner has no traction with the ground.

"A half miler should have a good stride but too long a stride is a fault. When boys first put on track shoes they trip because they try to put the foot down when it is still traveling ahead. Practice will correct this. A cure for bent knee running

"A half miler should have a good stride but too long a stride is a fault. When boys first put on track shoes they trip because they try to put the foot down when it is still traveling ahead. Practice will correct this. A cure for bent knee running is to have a man work a lot at two thirds speed. A runner should not kick up behind higher than the knee. John Paul Jones, world's record holder in the mile, had no heel kick in running. A remedy for the heel kick is to have the boy drive harder off his toes.

Arm Action:

"Arms should swing very naturally--thumbs up and about parallel. They should not swing past the median line of the body. Runners should be made to hold form through to the finish. On the finish sprint the runner should lean forward to have the body well ahead of the feet.

"The only fair way to pick runners is by a trial. A man came up to "Heck" Edmundson at a banquet and said he had overlooked a bet with his boy. The time trial is the answer to any such complaint. Time trials should begin at least four weeks before the first meet. A practice 660 at full pace is used for half only after the season starts. Coach Bresnahan of Iowa asked Edmundson if 660 is enough work for a rugged man in the middle of the week. Coach Edmundson stated that in his opinion the rugged man took no more work than the small fellow after he was in shape. However, it took more work as a rule to get a rugged man in shape. About 40% of his half milers go out for cross country but he believed they would do just as well if they had confined themselves to regular fall track work. He liked to have his men doing regular work in the autumn. For this reason he had a number of medal track meets during the gridiron season.

"Regarding pace work, he said it was important for men to be sure of their first 220 and the last 440. Mel Shephard always asserted it best to run the first quarter three seconds faster than the second. For a two minute half he would say 58.5 sec. for the first quarter and 61.5 for the last. For a 1:57 half it would be 57 and 60.

Dad Butler said the old world's record of 1:53.6 was run with a 53.6 and a 60 second quarter.

Coaches Anderson, Simpson and Hahn said they had their half milers run cross country.

Coach Schulte mentioned the Hare and Hound races used at Nebraska as fine fall work.

Dad Butler said that he thought five mile cross country too far for college runners. He recommended 2½ miles for colleges and 1½ miles for high schools.

Coach Anderson asked how you would improve a "plodder" on the half mile. Coach Edmundson answered that he should run through a 440 and finish with a 220 at 9/10 speed. He was strong for a fast finish. When most records have been made one runner has set a fast pace and another has stayed with him and put on a fast finish to win.

Coach Simpson asked Edmundson if he liked to have opponents set the pace. Coach Edmundson answered that personally he had always liked to set the pace but his men had generally wanted to run back of the pace setter.

Dad Butler said he always had his men finish practice runs strong as if they were in a race.

Coach Edmundson advocated carrying arms fairly close to the sides, the hands about to the hips with the arms relaxed.

Coach Schulte stated he liked the Nurmi style of keeping the arms rather wide as he thought it gave more freedom to the chest.

Edmundston commented that distance men developed better and lost less weight in the colder climates. This helped the Finns.

Dad Butler made the statement that the Finns run with an even pace all the way but that he always had his milers run the last quarter in 60 seconds. Ray Dodge always planned to run this way. He told a story of himself running a half mile under two minutes, the first time it had ever been done. He was paced and the quarters were the same in time. The judges took the watch to a jewelry store to see what was wrong with it.

Coach Edmundson said that the 880 men should run on the ball of the foot. High knee action was good for practice but the men would forget about it in a race.

SPRINTS

Archie Hahn, University of Virginia:

"No heavy man has ever been a great sprinter. However, a sprinter may be tall or short. Nervous energy is the one essential quality. Anyone may learn to run fast. Real sprinters, however, are dou btlessly born with the capability for speed. The coach later releases that speed.

All track men should sprint some. Distance runners need it to give them a finish.

"Sprinters must learn form or have it naturally. It is unwise to change over a man's natural action too much. Smooth up, that is eliminate faults but retain as far as possible or rather build directly upon--the natural mechanics of the man.

"Run well up on the toes. Pick up the feet quickly with a high knee action and high arm action. The latter more pronounced the last 30 or 35 yards of the race. Use the hips in the bound--this lengthens the stride. Finish not at the tape but five yards beyond it. Make much of your work to bring out this final sprint. Score 70 yards and finish the last 30 dead sprint.

"No man can "dead" sprint one hundred yards much less the 220.

"On the Mark":

Be relaxed. Never think of the gun. Think only of getting started--you'll hear the gun all right.

"Don't let the beginner take short choppy strides off the mark. Get him into his running stride as soon as possible. Make everything as natural as possible. Get the man into running stride quickly. Take natural steps on start, don't chop or pound on leaving the holes. Be sure to use your arms in coming out of the holes. Use of arms is very important.

"Knee of back foot near the instep of front foot. A lanky long man will put his hands further out than a short man. The space between front and starting line or hands will vary somewhere possibly between 7 to 11 inches, depending of course upon structure of the sprinter.

"Most youngsters get "hunched up" too much, no relaxation. Back foot firm but relaxed in hole with initial drive use arms forward and across but only toward never beyond the medial line in front.

"On the marks don't look too far down the lane, 3 to 5 yards is far enough.

Hahn says you should get a tremendous drive from the back leg on the start, but he never stresses such a drive when coaching his men for he believes it may cause too much tenseness.

"On the command "get set" come up but not forward--in other words have your weight well distributed but forward so on "get set" you need not go forward but only up.

"Leave space between knee and foot on mark to avoid wobble at start. Allow no toeing out either on marks or in sprinting.

Cure this toeing out by ordering the sprinter to run "pidgeon toed".

"If a man runs too stiffly have him 'relax his tail', that is relax the hips--shake them down. Relaxation is the mark of the great athlete.

"Length of stride should be determined by body angle. The foot should not light ahead of the head. For a man with a short stride, have the man lift his knees. Better to have a man understride than overstride.

Suggestions:

"Dad" Butler of Detroit. Keep thumbs up in sprinting and arms will carry straight naturally. The "finish" needs a lot of practice. Dad said. If you use a fork only when company comes you may jab your eye.

Sprinters who wobble can be cured by having them straddle a line in working out.

Brutus Hamilton, Kansas, disagreed with Mr. Hahn for he expressed the opinion that instead of a "burst" over the last part of a race the sprinter should hold his form and relax. On the start Hamilton advocates the front leg drive. Also advises against deep breath on marks. Does not advise a burst at 70 yards.

Hahn suggestions on finish: "Three feet from tape throw body at tape, the jump or Paddock finish is not helpful.

Hahn on breathing: "Breathe naturally, but breathe without fail. Hahn, Simpson, Paddock, Scholz all breathed naturally. Coach possibly better not discuss breathing with athlete but watch to see that he breathes. To discuss it without need may cause him to become selfconscious about it.

"Heck" Edmundson, University of Washington: Practice finish pitch after not less than 30-yard score. Watch your man for stride but don't use a tape measure on his stride.

"Indian" Schulte, nebraska: Made many tests of pitch finish, convinced that correctly done it will give a minimum of 18 inches.

Hahn--Indoor start from wood; feet closer together, rear knee slightly ahead of toe of front foot. In commenting on the finish or pitch for the tape Hahn asserted that any man with a good pitch who was fast enough to stay with Paddock to within five yards of the finish could beat Charlie because of the fault in the Paddock flying finish.

Schulte commented similarly, adding that the Paddock finish was primarily showmanship and that as a matter of fact Charlie could make Barnum of Barnum and Bailey look like a piker.

Jackson V. Scholz, 1924 Olympic champion in the 200 meters, is probably one of the best 220 men the U.S.A. has ever produced. At least he had made a study of the event. He claims that the 220 must be run like the 440--that no man can dead sprint the event. Scholz goes out into his sprint stride fast for 50 to 75 yards then strides for the middle part of his race and puts on a sprint at the finish. His nice appreciation of the pressure to put into each part of his race marked him as a great 220 man. Our present day 220 men could well apply Scholz' method.

Dean Cromwell, University of Southern California:

A coach in college should let the form of the well developed high school boy alone if he is good. There are a lot of forms. Roland Locke did all of his sprinting from his hips down and got his swing from his shoulders. Get all the stride possible in sprinting. There are a lot of ways of getting this stride. Fast leg action is always a prerequisite of speed. Give your sprinters a tremendous lot of work at starting, running from 35 to 50 or even 75 yards. Never run men a 100 yards expect in meets. Work on speed every day. Give the fast man a handican to make him press. A perfected runner cannot go any faster. He has a limit.

Coach "Pitch" Johnson of Drake asked for a schedule of work for a sprinter. This schedule of work is used for sprinters:

Monday - Jog around the track once or twice without stopping with no attempt at speed. Work conditioning exercises.

Tuesday Do a 200 or 220 for endurance, running 40 or 50 hards fast then swinging along like a quarter miler and then finish the last 40 yards fast. Watch this last 40 yards for form. Rest 10 or 15 minutes and then repeat. Two or three of these are enough. A boy can be taught to stride. The bounce must be converted into a forward drive. A sprinter must have this bounce in his make-up. The knee should flex and the thighs come high, the leg come out straight and well in front. If your man is a 220 runner let the work be 300 yards with the first 100 fast.

On Wednesday, Thursday and Friday give the sprinters plenty of work with the starting gun.

High hurdlers can condition themselves with these driving-floating 220's. These are not racing trials. There are some men who should never do any of this over distance work.

The limit of speed in the 100 yards is 9 seconds. Some one will run that fast some day. In running the 220 in 20.7, George Simpson at Stagg Field in Chicago in 1930 ran all but 50 yards of the race at full speed. Everyone cannot run so far at full speed.

Never work out the day before a meet. Kelly would always run better with two days rest. Better not to suit up at all.

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Coach Kamper of South Dakota State College asked if long trips hurt men. He replied that in taking men across the continent they keep their condition very well. Nothing is gained by stopping to work out along the way. If preliminaries are on a Friday, he liked to get there and work out very lightly Tuesday and Wednesday and rest Thursday. Field event men are not hurt by travel but the distance men seem to lose.

This diet while on trains is good:

Breakfast--
- Orange juice
- Cereal
- Toast
- Two fruits
- A big man may have a chop or egg, if he wishes

Lunch--
- Few want meat at noon
- Vegetables and a fuirt salad
- Spinach is especially good

Dinner--
- Two cooked vegetables and a big helping of meat
- No milk in hot weather
- Coffee, if they are used to it
- Rather have them not use it
- Tea is better
- Roast beef and steak are fine in the meat line
- No ice tea or ice water. It chills stomach and stops flow of gastric juices
- Good idea to carry own water along
- A light dessert is good. (Anything you can feed a baby is good for an athlete. Custards, rice and tapioca are good and ice cream, if eaten slowly.)

Constipation is a thing a coach has to fight. The secret is the development of habits of regular elimination in the men. This is the biggest lesson we can teach our athletes and one that will benefit them all of their lives.

CROSS COUNTRY

Frank Anderson, Texas A. & M. College:

Men should start their freshman year in order to get the necessary "bottom". Should start training very light. A good plan is to have them start by jogging two hundred yards and and then walk, jog again and walk again, increasing distance of jogging as training progresses. At the end of two weeks be doing two miles each evening. Will be a good builder for all runners. Likes to have quarter milers run cross country. At the end of third week should be running three and a half miles. There should be plenty of walking worked in with the running. The amount of walking should decrease as the training goes on. Almost five weeks is required to get a man ready for competition. Cross Country is not as hard on a man as the two mile. The stride used in running the five miles is shorter than a two miler uses and the runner is nearly flat footed.

Training:

Tiring in cross country as in other running is caused by the distress that comes from the heart not being able to pump away the waste fast enough. Training must be such as to build up the heart. Men need plenty of sleep. Rather not have smokers and men should not dance the night following a race. Men should work enough to get tired but not exhausted.

Care of Feet:

Wear wool socks for the cushioning effect it gives the feet. Have shoes that fit well. Benzoin is a very good foot toughener.

Coach Schulte suggested salt water also as a toughener.

Coach Edmundson said that one cup of formaldehyde in two gallons of water set in a pan so the boys could stand in it a moment each day after their shower was a good treatment.

"Dad" Butler said frequent changes of socks helped to do away with foot troubles.

Leather shoes with soft rubber soles are the best for cross country. A point was made that cross country smoothed out the running form of the men.

Coach Schulte told the story on coaching that he got from Jim Bausch. Jim having discovered a girl who put the shot forty-one feet, coached her for three weeks and she got so that she could do thirty-six. This story was told in reference to over-coaching.

Coach Young of Michigan State in responsd to a question, stated that the Eastern Intercollegiate Conference had changed the race from six to five miles.

Coach Archie Hahn of Virginia said that a runner should cut stride and lean forward going uphill and relax and let momentum carry him while going downhill.

Coach Anderson of Texas A. & M. agreed with Hahn and added that the downhill stride would be longer than the average with as flat a foot as possible at all times. Bound off fast as soon as top of hill is reached.

Ray Conger said he couldn't see a lot of difference between the two and five mile races, except that in the five mile you were in misery longer. He said that most runners had higher knee action and used the arms a little more running uphill. On downhill he cautioned against landing on the heel as it would jar you up.

Coach Schulte said that the two mile race was better from the publicity angle since it could be viewed by all of the people at a football game. He liked it better than cross country.

Coach Simpson of Iowa State said that his boys liked the two miles better, however, he had his men run some cross country to get in shape.

Coach Jacobs of Oklahoma said his men preferred the five mile race. They had the two mile in the spring and liked the change to longer distance.

"Dad" Butler of Detroit said that at Oregon they ran a two and a half mile race and liked it. He thought the five-mile killed more milers and half milers than it made.

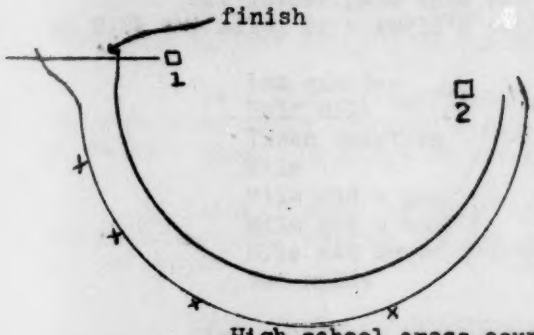
Brutus Hamilton of Kansas said he liked the five-mile race better.

Before taking a rest period the coaches voted that Archie Hahn of Virginia should pay rent on the stadium track if he did any more running during the A.A.U. meet.

SCORING CROSS COUNTRY RUNNING

Coach L. W. Olds, Michigan State Normal:

Having charge of the high school cross country runs in Michigan, he has developed a very fine method of scoring. The funnel system of finishing is used. The race starts and finishes on the regular running track. Each man has a cloth number on the front and back of his track jersey. No runner is counted who does not finish wearing his number. After crossing the finish line they run into a funnel.



No. 1 man calls out the number of the boys as they finish. Extra men in funnel see that the men come up to the scorer (No. 2) in the order that No. 1 has called them as finishing, giving them a card with their order of finishing. This card (No. 2) takes to use in the final scoring. No coaches are allowed on the field.

High school cross country (2 miles) is run in four classes--A, B, C, and D in Michigan. The sport is growing in Indiana, Michigan and Ohio.

Some research work has been done which shows that a boy loses about a half pound in one of these races. Two miles would seem to be enough for a high school boy. Boys under fifteen should not run. In a basketball game a boy loses four or five pounds. It is reasonable to think then that the cross country is not as hard on a boy as basketball with its tournaments and hard play. In Michigan there were forty-three schools in the last meet.

Coach Castleman of Ohio State reported that the boys gain weight if they were not worked too hard in training for the race.

Sensing that there was some opposition to cross country on the part of some coaches, Coach Anderson of Texas A. & M. asserted that cross country men would come back and beat out the other boys in the mile and two-mile in the spring. Cross country gave competition for a large group with a minimum of coaching.

Coach Olds added that Michigan had a rule that a high school boy must have a month of training before he is permitted to run.

TWO MILES

"Dad" Butler, Coach at the University of Detroit, took charge of the meeting.

The general work is like the mile--this being an addition to his talk on the mile.

He repeated that five miles was too far for two milers to run or for anyone under twenty-one years of age.

Coach Schulte offered the opinion that men who ran that far should be twenty-five or six years old.

Mr. Butler gave this schedule as the pace used in running an 8:58 two mile, or a world's record by Nurmi.

1st quarter	- 62 sec.
Half mile	- 2:07-65
Three quarters	- 3:14-67
Mile	- 4:22-68
Mile and a quarter	- 5:31-69
Mile and a half	- 6:41-70
Mile and three quarters	- 7:51-70
Two miles	- 8:58.2-67.2

Chamberlain of Michigan State last year used this pace to do 9:20.

1st quarter	- 65 sec.
Half mile	- 2:14-69
Three quarters	- 3:24-70
Mile	- 4:35-71
Mile and a quarter	- 5:47-72
Mile and a half	- 6:59-72
Mile and three quarters	- 8:12-73
Two miles	- 9:20-68

He advised using such a schedule and scale it down for each individual. He again drove home the fact that two miles was enough for college men to run.

Coach Jacobs of Oklahoma thought that the five mile race took care of some men that the two mile did not.

Bob Simpson thought that our college men should work at the five mile after getting out of college and thus develop men to meet the Finns. Many foreigners run until forty years of age.

Coach Butler said he thought that for a high school boy one mile was enough.

440-YARD RUN

George T. Bresnahan, University of Iowa:

Three kinds of men are available for the 440-yard run, as follows:

(A). Sprinter type--A man who can run the 100 well but has not the immediate endurance to runn the 440.
(B). 440 type--A man who runs the 220 or 440 naturally, has essential speed and endurance.
(C). 880 or mile type--A man with endurance but lacking speed.

Suit your work to the man himself.

The A Group:

Frail men--Pre-season: Over distance, group work.
Early season: 660, little hard work, less group more individual work.
Mid-Season: One day each week 100 yard sprint and after 25 minutes give them a strong 300 followed by 440 if desirable.
In mid-season give the men just enough work to keep them up. "Carry the frail man, don't work him too hard.

Trials for meets on Saturday are usually run on Tuesday.

Method of telling condition of 440 men and the amount of work they need:

1. Weight charts.
2. Personal appearance. Consider how much outside work he does.
3. Pre-meet tryouts.

Weight range for week:

S M T W TH F S

Highest on Monday and up again toward high on Wednesday. When men lose weight analyze for causes and probable cure by a lay-off.

Early season training:

1. Work six days a week.
2. Four sprints, starting daily.
3. Alternate speed and endurance.

4. Use 660 by breaking into 2x330 with 10 minutes between 330's.

5. Baton passing.

Run the 330's about 9/10 full speed. The 330 is fine for stride work as it gives length of stride and rhythm. The 330 also gives an opportunity to teach float and pick-up--that is practice changing from one to the other.

Fall work for 440 men: Come out with thecross country men.

Bear in mind that there is such a thing as "harmful imitation". All men cannot use the same style or form.

Mid-season schedule:

Monday - Over distance jogging on the grass two days a week at least. Work in various events for change and relaxation.

Tuesday - Time trials in under distance work. Rugged men more than slight men. Rest men not more than 20 to 25 minutes between trials.

Wednesday - Warm up exercises, corrective work.
Baton passing--two starts from marks and then 2 300 or 440 at an optional pace.

Thursday - Pass baton two or three times then easy work like jogging.

Friday - Jog a little and exercises.

"Heck" Edmundson: No work on Friday and very little on Thursday.

"Dad" Butler: No work on Friday. Need longer layoff or rest periods after hard work. His experience with boxers convinced him of the value of more rest after condition has been reached. He had called out boxers after two or three weeks of rest and they have given him great exhibitions of condition. He pointed out that Corbett had a downfall because of over work. Butler remarked: "You can't take water out of a well with a barrel forever but with a spoon it will be a long, long time before the water is exhausted."

Bob Simpson of Iowa State said he wanted to see the boys on Friday but would do little.

It was suggested that a 440 man who learns to use the drop or relaxed hip as advocated by Archie Hahn will find relaxation therein.

How fast should each 220 of the 440 be run?

:49 quarter - George Bresnahan: 22.3 for first 220

"Rut" Walters of Northwestern tried for 22 flat.

Ted Meredith carried a 22 flat.

Coach Schulte of Nebraska said that Gwynn Henry of missouri ran his 440 men with an idea of doing the first 220 in 22.8 or 23.

(Bresnahan: To run quarter correctly, man must run against own maximum ability rather than against some other man.)

A vote of the coaches was taken as to what speed should be used in each 220 for a 50 second quarter mile. Four were in favor of a 24 - 26. Five thought 23 - 27 was about right. Two favored a 23.5 - 26.5. No one was in favor of a 22.5 - 27.5.

Ralph Young of Michigan State said that only a world's record man could even hope to run the first 220 yards near 22 seconds. "Dad" Butler said he thought the same way.

Ralph Young of Michigan State remarked that Williams of Southern California did a lot of his running from behind, depending upon his finish to bring him up in the race.

Archie Hahn of University of Virginia said he thought that in this connection it was well to have quarter milers do a lot of work on the finish just as with sprinters.

"Dad" Butler of the University of Detroit:

Men need a world of preliminary work for these races. He has his men jog for five weeks to get their legs into condition. This period of easy work should do away with a lot of shin splints. Cross country work is good to get them into shape. By starting slowly they will gradually increase their speed. Don't let the men run too fast at first. It is all right to walk and run in early season work.

George? the first miler to run 4:12, ran his first quarter in 60, the second in 64 for a 2:04 half; his third quarter in 66 for 3:10 and last in 62.

The first quarter of a mile kills off lots of men because they are not able to carry the fast pace they find necessary in order to get a good position in a race. For a 5:00 mile the first quarter should be 72 seconds, the second 76, the third 78 and the last 74.

When asked about some of his milers at Oregon, he said that one year he had seven under 4:29, running with these times: 4:22, 4:22.5, 4:23, 4:26, 4:26, 4:26 and 4:29. Now he wished he had two men who could run that well. Somebody said if they had one man who could do 4:26 they would wake him up every morning and kiss him. "Dad" said he felt the same way when he heard of the Stanford team that ran the mile relay in 3:12. He said he would kiss any 48-second quarter miler between the eyes every morning, but four of them was hard to believe.

Any size man can run the mile. There was a little miler from Michigan that ran a beautiful mile and didn't weight 130 pounds soaking wet. The fast quarter of a fast race was really always run in 60 seconds. Milers, to be good, had to learn to do this. The runner should run semi-flat footed. Don't hit on the heel but take as much strain off the calf of the leg as possible. It is impossible to run that distance well and stay up on the toes. In the 440 and sprints it is possible to do so. Nurmi is an example of a semi-flat footed runner. The Lord makes runners and a coach has to be careful not to ruin them. Corey, the Marathon runner from France, came to the Chicago Athletic Club to run under "Dad". At first he ran flat footed but changed to his toes at the advice of some ill-advised person and broke down his feet. A Bishop came to the college to speak at a convocation. He told a story of the old professional runner who said your great grandfather ran the first quarter for you, your grandfather the second quarter, your father the third quarter but the last quarter you had to run yourself.

Never let your good men run against each other. It takes the heart out of one of them who gets beaten. Peter Jackson, the great negro, once said, "Condition and confidence make a boy game". Give the boy a slow start and bring them up. A 51 quarter man will not be pulled by a 62 quarter in a race. Speed is necessary.

Most of our knowledge of training comes from the old professional fighters and runners. They did not believe in working

hard on Monday. This is a fine schedule of work:

Monday - Jog some and end up workout with a 62 second quarter.
Tuesday - Run a 3/4 mile. For a man who is a 4:32 miler, he should run at this pace: 65 - 69 - 60. Note the last quarter in 60.
Wednesday - Run trials or a 1 1/2. If there is a meet on Saturday, do little or no work on Thursday or Friday.
Always run against the watch. Men must know their pace.

Training:

You can't put your men at a training table. The boy who has been used to hot soup and wine, the Scotchman who has been raised on oatmeal and the Dutchman who has always had his beer, are not all going to do well with the same training. Give the boys the right to eat any wholesome food. Your mother is the best trainer you can get. Not so strict about smoking. If a boy thinks he has to smoke, you have no right to say he can't. As a rule they do not care to smoke. Archie Hahn smoked seventeen cigarettes yesterday and you'll have to take an elm club to kill him when he gets too old.

Men should get outside to run as soon as possible. Have them wear plenty of sweat clothes. Have a good well-built shoe that fits well. In semi-flat-footed running the heel just touches.

Men should work for a 200-yard sprint at the end of the mile.

Coach Haylett of Kansas State asked about the use of setting up exercises. The answer was that you should spend a lot of time with them. You run considerable with your arms and back. Push-ups are a very good exercise.

No feat at all for a man to run fifteen years. This reminded him of the story a man was telling John L. Sullivan of a fellow jumping off Brooklyn Bridge. John had been drinking and expressed the opinion that this was no feat at all. When asked what he would consider a great feat John said, "Show me a guy who can jump up to the top of the bridge, any damned fool can fall off".

"Dad" said this story also recalled the one of the Irishman who took his family to the circus. The rhino was in a sideshow tent. The Irishman said he sure would like to see the rhino but his family was too large. The circus man said the rhino was a rare animal and they could not cut the price of admission. The Irishman still hung around. Finally the circus man asked him how large a family he had. "Seventeen children", said the Irishman. "Stay right there", said the circus man, "I want to bring the rhino out and let him see you".

"Dad" said you'll have some rare men to handle, so use care. A jumping shoe with the spikes cut off makes a good working shoe with a lighter shoe for racing. He called attention to the methods the Indians used of carrying their weight forward more than we do. They sort of run falling down.

A track sho, must be rather tight or snug. If a man toes out, have him run down a line as an exercise.

Advises to work out of doors even in bad weather.

Coach Edmundson said a man could gather himself better for the sprint if he ran a few strides flat footed berore he started his finish sprint.

Coach Simpson asked just what "Dad" meant by a semi-flat-foot. "Dad" said he meant to run on the ball of the foot with heel just touching the ground but no pressure on the heel. In the fast rrO of a mile a man should come up on his toes on the stretch and should try to make his sprint just a little longer than the ordinary practice.

Coach Bresnahan of Iowa asked if "Dad" objected to hip action. The answer was that it was okay if you could use this action in running as Hahn used it.

"Dad" said a great runner must practice details until they became a habit. He told of taking a friend to hear Paderewski play. After the performance when asked how he liked it the fellow said it was all very fine but they couldn't tell him there wasn't a lot of luck in Paderewski hitting the right spots so damned fast.

When passing a man in a race make it as impressive as you can. He told of the two old runners, Schmidt and Burt. In the race Schmidt tried to pass Burt but could not. When Burt pulled a handkerchief out of his belt and wiped his forehead Schmidt quit and said afterwards that when Burt started to wash up for him he quit right then.

Coach Hamilton of Kansas asked if all the boys ran the same schedule. "Dad" said, "Yes, but he let the slower boys run a slower first quarter.

He believed in the idea of running men a good race on Saturday if they were not competin;. In running a group of men do your best to keep a few from lagging back. Make them stay up with the leaders even if they only run 300 yards. One thing that must not be neglected is a thorough warming up. Some boys take a lot more work to get warm than others. He advised plenty of exercise such as push up and work to develop the upper body. You need a large squad of runners if you expect to develop very many men.

"Dad" said the average boy was like a dog chasing a deer. He would run for miles through a dozen streams with his tongue hanging out with thirst but would never think of getting a drink. Your boys are the same way--they think only of getting to the tape. For that reason you must build good running habits. They will only do the right thing because it is a habit.

Some of the coaches wanted to know what plan Illinois used to develop their great milers. Coach Werner replied that he had been

checking "Dad" Butler pretty close and he couldn't see where it differed any from the practice at Illinois. In his opinion nine-tenths of the milers are overworked. He believed in plenty of rest before competition. In the rrO he thought he same was true. He said that most of the high school runners show overwork by the coaches.

Ray Conger was called upon by the coaches to give some of his ideas in the mile. Ray said that the average boy going to a meet would let the unaccustomed conditions influence him and would not warm up enough. He liked to spend fifteen or twenty minutes in his warm up. He would jog at least a quarter mile. In his warm up he used a number of exercises, among them a lot of bending and twisting. He always included a hundred-yard sprint with enough work to get a good sweat. In answer to the question as to what to do when you ran two races in one day. Ray said he warmed up the same for both races. Conger told the story of running a race at the Millrose Games. The spectators are always willing to advise a new man as how to run. Ray was running around warming up when a woman in a box remarked that he had already run his mile. Ray took the hint and cut his warm up short and lost the race as a result. He advised that a runner start his warm up work very easy. He thought the sprinting helped him in the fast start a miler had to make in a hard race. He favored the idea of resting with feet a little higher than head while waiting for the race. This is a theory Nurmi gave to Conger. This was supposed to allow the blood to get back to the heart. He did not favor the forced heavy long breathing that some men used just before a race. The practice just before to the marks might help to get rid of the carbon dioxide and take a nervous man's mind off the race. Ray said he had watched Nurmi a number of times and he seemed to use the same method of warming up as he used.

"Dad" Butler said he favored the deep breathing just before the race as it opened up the lower lobes of the lungs.

Conger said he favored lots of walking for early season training. When asked by Coach Bresnahan about rub downs Ray said he thought most rubbers were too rough. For that reason he did not care much for rubbing and never took one after a meet. He said that he thought a trainer who took the muscles and rubbed them very gently toward the heart was all right. He liked to do his own rubbing. The psychological effect of mineral oil and wintergreen used in rubbing is good. Lloyd Hahn always liked a good rub before a race.

"Dad" Butler said he did not believe in rub downs. A good man doesn't need it and a poor man isn't worth it. Massaging is tiring. If a boy has a sore muscle, that is a different matter. The right kind of rubbing can help.

Conger again hit the idea of sprinting in the warm up. In the start of a mile with a good field you have to sprint 40 yards to get a position.

"Heck" Edmundson said he thought it was a great advantage for a miler to be a fast starter. This is a point a lot of milers consider as only a minor part of their race. "Heck" asked "Dad" why he was so against rubbing. "Dad" replied that the rubdown was very nice to have but it took a lot of time for the athlete and the man doing the rubbing. He might get it at home but when away to a meet not be able to get a good rub as a rule and thus have a mental worry that he was not right.

"Dad" Butler closed the discussion on the mile by stating that every good miler had super human effort he could call on to win races. The story of John L. Sullivan showing this spirit is shown by a team of horses running away with John. He refused to let go of the lines. After being dragged for about a half mile some one stopped the horses and asked John why he didn't let go of the lines. His reply was, "Why in hell should I let go, I'm here with the horses, aint I?"

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TRACK AND THE CROWD

Henry F. Schulte of the University of Nebraska:

I am of the opinion that despite the cry of commercialization we hear, especially regarding football, we coaches of track would not resent a bit of it as far as track is concerned. I mean, we coaches would be exceedingly contented to have crowds come and pay to see our contests, for all of us could do more good work if we had an income from our sport. That business of creating an interest in attendance at track meets is our problem and one that we have fallen short of more than any other.

Track of itself is a marvelous sport. It has wonderful qualities to attract the crowd. Our problem is to show track to the spectator. If we could do that we would have crowds. Again and again each of us has seen the crowd gather around the broad jump five deep after all other events are over and watch intently the mediocre performances of some high school broad jumpers. Allow the spectator to see well what is going on and he'll stay till the cows come home. Our problem is to show the stuff to the spectator. What can be done?

In the sprint finals the crowd should be told what lanes the men run in, particularly the two or three stars, and their best performances. Singling out two or three performers may sound like favoritism but we can overlook that for the good of track interest. The spectator needs to have his attention focused upon one or two men. If they win, good, if they lose, it is well too for then the unexpected has happened. Immediately after the race is completed the results and time should be announced. Delay of any kind spoils the interest. The time should be given immediately and the placing quickly as possible.

In the longer runs which start in front of the stands the stars should be introduced with account of performances. As the race develops the stars should be spotted for the crowd regularly. Comments on stride, etc. help interest too. Again if a dark horse licks the stars, it is well.

Actually the field events should not be permitted to contest during any race--for one minute before and until the completion of the race. This not only would permit every spectator to focus attention on the track but would suggest that attention would intensify the interest in the flash event. This suggestion would hold true for all events up to and including the 880.

The field events: The vault and high jump should be focused on when the last two men are performing. Of course, the height of the cross bar should always be in evidence on a height board. But when the final efforts approach the crowd should be informed of the one or two men contesting and such facts as may be of interest at that time.

In the weights and the broad jump the performance boards should give the result of each effort and when special performances are made the successful contestant should be introduced to the crowd.

In close contests for team championships, the running score should be bulletinized and possibly even announced with a comment upon the probable change of score after the next event or two. This creates interest in the suceeding events and makes the crowd realize that the meet is a coherent whole. In fact a well planned scheme of announcing should be built upon the running score. The team standings can be made the cohering medium, and about it can be featured the star individuals.

Somehow we coaches have failed to present our performanes in showmanlike fashion. We have fallen down on one of our biggest jobs. This article does not please me--I have poorly what has been said, and have not covered the ground. I would appreciate suggestions, however, and stand ready to correspond with anyone who has a new idea or improvement. If we could contribute something toward this purpose, we would be tremendously happy.

Tom Keene of Syracuse University:

The coach has a difficult task carrying the men through a long season. He should plan to lay them off from Thanksgiving through the Christmas holidays, then start them working at jogging and building up their pace. Cross country men will need speed. Have them run quarter miles to get back this speed. Sprinters and hurdlers do not do any cross country work.

Try to get all hard work done before the meets start and then just do enough work to keep them in shape. Hard labor on the outside as a rule is bad for track men--just the same as putting a race horse on a dray wagon. Working in the hot sun saps most track men so they ought not to work too hard when the weather is hot. Distance men, however, should work out of doors in all kinds of weather.

At the end of the season men should continue to work two or three times each week and not let up with training too abrupt.

Ward Haylett of Kansas State said he thought a coach could not give too much thought to placing men in events. He should not only think of scoring points but should consider the future of the boy.

ORGANIZATION OF TRACK MEETS

T. N. Metcalf, Iowa State College:

Conditions must always be right at a track meet. Records made under illegitimate conditions will not be allowed. A favoring wind of three miles per hour disallows any record.

There were just a few minor rule changes this last year. This next year they expect to recommend the Olympic starting rules be used. With this there is no distance penalty but two false starts disqualify a man.

The new high jump rule requires that the head must be higher than the hips and buttocks when the jumper is going over the bar. The judge of the high jump should announce the legality of every jump made whether bar is cleared or not.

Coach Jacobs of Oklahoma said he thought that the high jump rules are always violated. He was in favor of doing away with the complicated rules. A rule requiring a one footed jump would be all that would be needed.

Mr. Metcalf said that an attempt should be made by coaches to popularize track meets by running them off quickly. He advised that finish judges be placed twenty feet back from the finish posts. From this position they are able to see much better than when they are placed too close.

General discussion was made on the Hop Step and Jump. All agreed that the most common fault was too long a hop. This is liable to injure the heel.

RELAYS

Dr. Castleman of Ohio State University:

Most distance men extend right hand back and watch other man coming up the track. Another method is the right hand back with palm toward the runner coming in. The exchange is made on the first stride unless the track is very crowded. In such a case the exchange better be made before the runner starts to leave.

"Chick" Werner of the University of Illinois gave his idea of the exchange with sprint teams. The important thing in such an exchange is to start soon enough so that the two men never get any closer together than is necessary to pass the baton.

It is well to choose men early in the season and get a regular order of running and not change the order. Effort must be made to have the exchange take place at top speed. Each man must have a certain point measured back from where he starts. He takes a standing start position. When his mate reaches this point he goes out at top speed with his hand back to receive the baton. With a perfect pass the receiver never slows down and the passer never comes any closer to his mate than is necessary to make the pass. Men should practice together a great deal.

When the field is crowded it helps sometimes to put a fast man first to get you out of the crowd. Run a sprinter against men making pass. They should be able to gain on the sprinter with the pass if the sprinter has about the same speed. If they do not, the pass is faulty.

Many coaches advocate the palm of hand being back and the thumb and finger down. There is a V between the thumb and fingers to receive the baton.

In distance relays it is more important to get a firm grasp on the baton. For that reason many favor looking back and receiving the baton in an upturned palm.

Charles Werner, University of Illinois:

A low hurdler first must have speed. Second he must have endurance.

The form used in the low hurdles is called the "step-over-form". The same arm action as in the highs is used. At Illinois we get them to thrust the one arm a little more. This thrust is downward not up.

The first leg that goes over the hurdle is bent as it goes over. Keep the trailing leg on the ground as long as possible. Just as the boy is about to over the hurdle, snap the leg forward. This step over the low hurdle is sometimes called an elongated stride. This stride is about 8 feet in front of hurdle and 3 to 3½ on other side. If the boy has his take-off foot ahead in the holes to start with it should take him to the first hurdle all right in ten steps. This is not always true, but usually. The number of strides between hurdles is seven. If your boy cannot make it seven, then he may tackle eight and alternate on each hurdle. This alternating is only indifferently successful. However, any boy 5 feet 7 inches tall should be able to take seven strides between hurdles. Oftentimes they take a long stride just after they land to make it come easier with seven strides. This first stride after crossing the hurdle is very important. If the boy is a little bit off balance or alights sideways or too far to one side or the other, he will have trouble in recovering.

In the race run as fast as you can for the first three or four hurdles, then relax or float (don't slow up). At the seventh hurdle you put on a burst to the finish.

The beginning hurdlers bring the trailing leg up over hurdle the same as in the high hurdles but not as high, however. After they are polished, they cut through with the back leg, no side swing of the back leg.

Speaking of himself, Werner said, "At Illinois they built a pair of blinders to keep me from looking around at other hurdlers but they didn't work wo well".

After hurdling practice the men run 150 or 200 yards. The first 50 yards they sprint, then they relax for a certain distance at a 3/4 speed, then at a given point they cut loose to the finish. Some nights the boys run three or four of this type of race in a practice.

Lee Sentman would train 35 or 40 minutes over three or four high hurdles. Then he works over low hurdles. Oftentimes works with sprinters.

On Wednesday night men run one flight over lows for time. When it becomes hard for men to keep up their speed, lengthen their arm action. This is often done after the seventh hurdle when it

becomes hard for men to reach their hurdles in seven strides.

Not as much body lean or pitch after going over the hurdle as in the high hurdles. To discourage jumping, keep back leg on ground as long as possible.

Bob Simpson:

Get back foot over hurdle easily so that boy can get a long stride. Recovery stride should be the longest of any stride he takes. You cannot get it too long without jumping at it. Be careful not to land off balance in going over the hurdle. Watch arm action for this. Occasional 300-yard is very good for over distance.

The week's work schedule in the lows may be taken from Bob Simpson's work schedule in the high hurdles:

Monday - warm up, 10 minutes of limbering exercises.
4 hurdles - 5 times, (start with gun).
rest 10 minutes, then 120 yard hurdles at 9/10 speed.
Tuesday - sprinting practice 30 to 50 yards.
easy work over 3 highs.
Wednesday - same as Monday except 5 hurdles 3 times against watch.
finish up by taking easy 150 to 175 yard sprint.
Thursday - easy over 3 to 4 hurdles.
Friday - take a shower.
Saturday - race.

If a man takes a spill over a hurdle, do not give him a lay-off. Make him go right over hurdles again. To guard against knee and ankle injury to trailing leg, take some rather still leather and cover training knee and ankle. "Dad" Butler recommends sheepskin.

HIGH HURDLES

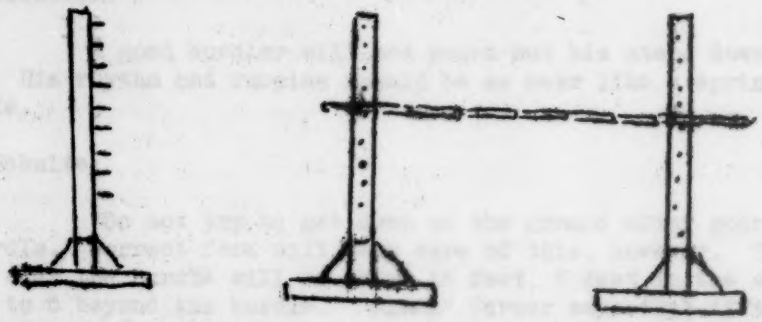
Bob Simpson:

"First of all, to have hurdlers you must have men built for hurdling. You can't make a hurdler over night."

Coach Schulte:

"Bob Simpson was an ideal type for high hurdles. He was well over six feet tall and had sprinters speed. Simpson was one of the first to use the new form in hurdling. On successive Saturdays he ran 14.9, 14.8, 14.6 and 14.6. This was a very remarkable record in those days. Up until Bob's time they used what they called, "spread eagle" form.

"Start a man hurdling by making him sprint over hurdles, (soft hurdles). The soft hurdle is a small high jumping standard on which you use cane tips so that you may vary the height from 6" to 3'6". Let the new man start sprinting over a 6" hurdle then gradually work up. The cross bar should be flexible and light, like cane tips, for greater safety to shins and body."



Bob Simpson:

"Don't throw legs in or out in going over the hurdle. This is called cradling. To correct a hurdler from going over hurdles too high, let him clear the soft hurdle and yet keep under a string that you have stretched just above so as to keep him from going too high. You may call this hurdling through a hoop.

"Do not have a stiff, straight front leg. Use what they call the "bent knee". This will give the body a chance to pitch forward or lean forward over the hurdle. To test a boy for hurdling have him sit with his left leg forward with a bent knee and the right leg to the side with his right tow turned up in the position that he would be in in crossing the hurdle and then see how limber he is in this position. A long, supple, loose hipped boy who has some speed will make a good prospect.

Some Good Exercises for Hurdlers:

No. 1. Stretch arms overhead and then touch hands to the ground.
No. 2. Do some high kicking with each leg while holding on to a support. Do not use a deep knee bend.
No. 3. Lay flat on your back, bending up knees and swinging knees from one side to the other.
No. 4. Lay on your back and do inverted bicycling.
No. 5. Put back leg up on the hurdle and bend body forward.

"Have your boys practice starting with the gun. Let them work out with your sprinters in starting and sprinting. Most of your trouble with your hurdlers will be in taking the first hurdle. They have a 15-yard sprint to this hurdle and oftentimes take off too far away or too close and this throws them off to start with. Oftentimes reversing the boy's feet on the starting mark will correct his step. When practicing on the hurdles have them work over at least 3 or 4 hurdles. Coach Schulte believed that 2 hurdles are enough. All agreed that you would get much good running 4 or 5 times over 3 hurdles than you could by running 2 full flights. When running these, however, see that your boy is running practically full speed as in a race."

In training for the hurdles, men should be regular in practice and regular in their hurdle exercises.

A small hurdler can use the same form as the larger man, but everything else being equal, the rangier man has the advantage. Form in hurdling is more essential possibly than any other event. A hurdler must stay on the ground as much as possible. He can't make time while in the air. Speed to the first hurdle is very essential.

A good hurdler will not pound out his steps down the track. His rhythm and running should be as near like a sprinter as possible.

Coach Schulte:

"Do not try to get down on the ground after going over the hurdle. Correct form will take care of this, however. The stride over the hurdle will be about 12 feet, 7 feet in the approach and 4½ to 5 beyond the hurdle. "Chuck" Werner says that if the stride over the hurdle is more than 12 feet that the boy is clearing the hurdle too high. When Werner was running his take-off was about 7 feet in front of the hurdle and landed about 4½ feet on the other side.

"There are 8 strides from start to the first hurdle for the average 6-foot boy. Each foot makes two prints between each hurdle.

"Shoot the arm opposite the foot that goes over first, straight ahead along side of the foot, with the palm of the hand down. The 'rear' arm is carried well forward, not further back than the hip. Your eyes always on the top edge of the hurdle just ahead of you. Pay no attention to anything else. You gage your take-off and spring over the hurdle with the muscles between the knee and thigh.

"Brutus Hamilton believes you should reach your hurdle height 2 or 3 inches in front of the hurdle so when you actually reach the hurdle you are on your way down. You get to the ground quicker and have a quicker recovery from the hurdle.

Bob Simpson:

"The back leg should not be hurried over the hurdle as it will throw the body back or straighten the hurdler up too →

much. Let the back leg bring itself over with the toe turned up. However, do not let the hurdler drag this back foot over.

"Chuck" Werner stated that at Illinois they have trouble with a sidewise action, the same shoulder coming forward with the front leg. They correct this by shooting the thrust arm forward faster. Werner does not like the double arm action because of too much lost motion.

Coach Schulte:

"A good hurdler's heels will hit the ground only as he takes off for each hurdle. A good hurdler will not bruise his heels. He will not need shoes with heels."

440-YARD OR 400-METER HURDLES

Henry F. Schulte, University of Nebraska:

The form over the hurdle is a cross between high and low form. The preliminary work on form could well be done on 2'6" hurdles at 15-10-10-yard spacings. Later the 440 hurdler goes to the 3' height with the same intervals. Practice at 15-10-10 etc. gives a man plenty of hurdle work without the exhaustion that would come were he working over the regulation intervals of the 440 distance.

The long hurdle racer needs stamina. He should do regular 440 work outs. In fact he should have the maximum 440 work outs--approaching possibly the 880 type of work. Without doubt he needs an occasional 660 or even an 880 for the 440-yard hurdle race in demand upon stamina is commensurate with the 660 at least. Full 440-yard work outs will develop the necessary stamina.

The racing itself is similar to the racing of the 440-yard run. A quick start, a strong 60 to 100-yard sprint, a float for 220 or 250 yards and a drive from any point, dependent upon the reserve the runner has as he approaches the finish of the face.

The great quarter mile hurdlers of recent years all were 440 men of calibre or quality 660 men. Lord Burghley, the great competing Englishman who won the '28 Olympic long hurdle, can run 14.6 high hurdles and a sound :49 quarter. Morgan Taylor, who ran second at Amsterdam, is equally strong in the highs and after the Games during his tour in Sweden and Germany ran but one 440-yard race, finishing a scant yard behind Bud Spencer who ran 47.7 to beat the blond Taylor. Johnny Gibson, who holds the A.A.U. record of 52.6 made at Lincoln in '27, actually was a fine 600 to 880 man.

The high class 120-yard hurdler would find the shift to the 440 rather to be dreaded. On the other hand a strong, supple 600 to 880 man who can learn hurdling form and has a rhythmic stride should be more easily convertible.

HIGH JUMP

Harold Osborn, World's record holder in the high jump:

Osborn's style of jumping is a variation of the Western. It is not a western roll. The run in the high jump should be worked out so the jumper can have the right distance for his take-off. In this correct distance or run he should use check marks to get his take-off right.

For the take-off spot, stand in front of the bar, reach out your arm at 45 degrees to the bar. Stand just so you can just touch the bar. Right where your feet are, marks the spot for your take-off. Run at the angle of 45 degrees to the bar.

Osborn takes three walking steps, which is twelve feet to his first check mark. Then four more running strides that cover 24 feet - a total of 36 feet. The first three strides are the shorter but they are even. The last four strides are a bounding run, not a jumping run. On the step just before the take-off, you drop or settle the body or get a crouch. As to how much of a crouch you get, depends on the condition and strength of the legs. If there is any lean to the body at all, it should be backward.

The speed of the body is carrying you forward over the bar. A terrific drive upward with the outside leg along with the spring of the inside leg and a hand drive with the inside arm carries the body up. The outside leg, in making the swing up, is not straight or locked. This outside leg goes over the bar first. The inside leg or take-off leg comes off the ground with a hard drive, the foot or ankle of this leg hits the outside leg hard just back of the knee or calf. The back goes over aprallel with the bar.

Osborn lands on inside foot and two hands, what he calls a three point landing.

Training for the high jump:

Run cross country in the fall. Get your legs in good shape. Once in condition, jump about twice a week. Don't try to see how high you can jump every time you jump. Rope skipping is very good; it develops the calves of the leg. Any one using Osborne's form must be well developed in the upper part of the body. In training Osborn works more in other track events than in jumping. He thinks hurdling is very good training. The timing and rhythm in the hurdles is very essential in the high jump. He believes a man is much better under-trained than over-trained in the high jump.

Osborn starts his jump at 5' 6". Be thoroughly warmed up before you start jumping at any height. Osborn likes a grass take-off best if it is level. Next best, of course, is cinders.

They should be just hard enough so that they will not pick up.

The most common fault that the average boy has with his jump is that he leans into the bar. He should be leaning back.

Distance from take-off to landing point for a 6-foot jump will only be about 7 or 8 feet. To get distance for take-off note point of maximum height and get it above the bar, thus regulating the take-off point.

Too many get a broad jump when they are high jumping.

Eyes are kept on the runway until the fifty step, then shift eyes to the bar. Use some angle in running at the bar at all heights.

Confidence is very necessary in jumping.

Barney Berlinger, University of Pennsylvania and a member of the last American Olympic Team and American Team to South Africa:

Start work on all events about three weeks before a meet, that is, assuming you are at that time working in your regular track events and are in shape. Work on the distance events first for about a week. Take the weights the second week with the broad jump and high jump or pole vault. Work a weight event or even two and a jump each day. For instance, take the discus, shot and broad jump. About ten days before the competition begin working on hurdles and sprints. The few days before the contest starts the training gets very light. You must go into competition a lit over what you weigh when you are trained fine to compete in only one event. This is a very grueling grind and you will lose five or six pounds the first day.

When asked what he weighed at the time by Coach Higgins of Florida, Barney said about 195 pounds, but that he wished he was up to 200. He would be better if he had not come down so fine. He expected to lose from twelve to fourteen pounds in the decathlon.

"Eastern" High Jump

Coach Roy Kenny of Oklahoma A. & M. asked Barney what high jump form he used. Barney said his was the eastern form. In this jump he started back 30 feet, six feet over to one side from the jumping standards.

With this jump the front leg goes up first and over the bar with a hard straight kick. Just as you go over the bar hitch up the buttocks. Barney pointed out the fact that with a build like his this last point was much more important.

Start out the run with short steps, then three long steps and a final long step. Crouch low and kick, bringing hands up with a hard swing. The take-off foot is slightly turned with the bar. You must wait until back leg is over bar before you get ready to land, which you do facing the bar.

BROAD JUMP

Henry F. Schulte, University of Nebraska:

The problem in the broad jump is to get out as far as you can without falling back. Two things (1) speed and (2) elevation are important in the broad jump. Roland Locke could get a very acceptable broad jump with his terrific speed but he lacked elevation necessary if he wanted to be a great jumper. The greater the speed with the elevation, the longer the jump. Another element is spring. An illustration is that of Irons who was a ten second man in the hundred. He could high jump six feet but was not considered to be a very good broad jumper. "Dad" Butler got hold of him and with one year of work he won the 1908 Olympics with a leap of 24' 6 1/2". Hubbard, Irons and Hamm were all good sprinters. You must be able to carry speed across the board and still get elevation in the jump.

Most jumpers must run from 120 to 140 feet to get up sufficient speed. The last two strides of the run are shortened in order to get the legs well under the body for the spring. When the stride is shortened the buttocks should be dropped nearer the ground to set for the jump. The last step is really a crouch. Hamm used a flat foot in driving off the board. Hubbard went up from the board with a terrific drive forward. You should hit the board hard and "drive the legs down to China".

Coach Butler said Irons seemed to run off the board when he jumped.

Coach Schulte said he thought that most men would do better if they tried to drive off the board with a hard kick with the other leg which is flexed, not locked. While in the air the driving leg is brought up with a kick but is flexed also on leaving the board. The arms are carried in a natural position. As the man leaves the board he brings up his arms to help in his lift and keeps them out as far ahead as comfortable as they will help a jumper to keep his weight ahead when he lights and prevent him falling back.

The greatest heights will differ with jumpers in relation to distance from the board. Many think a lot of negroes are good jumpers because they are naturally flat footed. The jump requires a spring from a flat foot. You cannot get a good jump if you stay up on your toes unless you have an extra lot of speed. On your drive from the board the leg you raise first is brought up knee first. A step and a half or a kick and a half is enough while in the air. The jumper should light well poised. The running or kicking action in the air serves to get the knees up toward the center of mass. The legs well under the body and the feet out in front as far as can be and not run too great a danger of falling back when you hit in the pit. Feet should be even and about eight inches apart. The higher the knees are drawn the longer the feet will remain in the air on a jump. When they "drag" the feet they hit the pit before the jump is nearly finished.

Coach Jacobs of Oklahoma asked what he thought of the practice with both feet together. Coach Schulte answered that while he did not believe it hurt the jump much, none of the great jumpers he had watched had ever done so.

Coach Butler said that he thought Irons could have jumped 26 feet if he had been taught to get the elevation that the jumpers learn today.

Coach Schulte said that Eddie Hamm took a side step just before he jumped. While Hamm thought it helped, he thought the practice was bad. It was an individual mannerism which he would not change if he were coaching Hamm but would not teach to another boy.

Coach Kenny of Oklahoma A. & M. asked at what point the greatest speed would be attained. The maximum speed in the run should be reached eight or ten feet from the take-off with a float the rest of the way. A man should use two or three check marks in his run. If two are used, one should be out 120 feet and the other 70 or 80 feet. A third mark near the board will make a man more accurate at hitting the board but he may cut his speed in trying to watch for his check mark. Many jumpers fail because they do not make a careful measurement of their run. They should go through their run without jumping three or four times each night. By working it on the regular running track they will get the experience they have of different runways being faster or slower.

The jump should be practiced with a short run of from 18 to 30 feet. In this work they can repeat a lot and work at their spring from the board and learn to handle themselves in the air without a lot of wear and tear on their legs. Practice jumps using whole run should be done only once a week or even less often.

Coach Werner of Illinois said he liked a run of about 100 feet. Coach Hahn of Virginia favored 105 feet. Coach Schulte thought that 120 feet was near right but that it depended on a man's ability to get up speed quickly and his success in handling himself at full speed.

No two jumpers are alike or have the very same form. Coach Butler cited one fellow, Connors of Ireland, who weighed 220 pounds, was 6' 2" in height, was slow on his feel but could still jump 24' 6". All he had was spring.

In answer to a question, Coach Schulte said that in his mind he did not think the scissors kick in the air was necessary but the first leg lift had to always be a part of the jump.

Answering a query as to the old use of a hurdle between the board and pit to teach height, Coach Schulte said he thought this practice was the essence of nothing. Several other coaches

gave the same opinion. The jumper does not watch the board after he starts to "gather" for the jump but thinks of his form and lighting in the pit. He will not know that he has fouled or made a fair jump. A jumper cannot jump often and still do well. Twice in ten days is all most men can stand.

Coach Jacobs of Oklahoma said he liked the scissors in the jump. One boy he had couldn't learn it. He finally took him out to a water hole and sticking up a flag in the water had him run and jump off the bank while running and reach ahead for the flag. Then he didn't have to think about lighting in the pit he learned the trick and had no trouble doing it in track work.

Coach Bob Simpson of Iowa State said he didn't think the scissors added enough to worry about. If they couldn't learn it at once, he let them jump without it.

Coach Werner said his men at Illinois used 6-6-6 stride. He explained that he had a man run some sprints and found what his average stride was. This he multiplied by six to get the check mark nearest the board. He took off a foot to make up for the "gather" or crouch. The second check mark is from two to five feet shorter than the first and the third is usually from 27 to 30 feet.

Coach Bresnahan of Iowa said his great negro jumper, Gordon, used two check marks, one six steps from the take-off and the other six steps farther back. He ran a total of 105 feet.

Coach Hamilton of Kansas said a lot of high school athletes and even coaches worked out a form from the picture of some great athlete. As a rule some photographer works out an idea that he thinks will look good when it is a thousand miles from what the fellow really does in going through his event.

Coach Anderson of Texas A. & M. said his men use the plain jump. Sometimes he has trouble with them pulling knees up too soon and letting them back down again before they land in the pit. This must always be watched.

POLE VAULT

Boyd Comstock of the Los Angeles Athletic Club:

College men and club men are very different in training. The club men already have their particular form worked out while the college men do not. A college coach should be rather reluctant to change the form of a man who already has his habits formed in the event and still does very well with a faulty form.

With a new vaulter the first thing for him to learn is how to carry the pole. He should hold it in a very natural position that does not cramp his arms or body or interfere with his run. The pole should be pointed down slightly in making the run. A fine exercise for a new man is to stand and swing the pole a lot in the manner he will hold it while running and sticking it to get familiar with the arm and shoulder action. Most of the things a new boy does naturally are as a general rule the near best form for him. To break a habit takes from a year to three years time. In holding the pole for the run the hands should not be too close together.

The run is perhaps the most important thing in the whole vault. In going down the runway always face ahead.

Coach Bohm of Washington State asked what form of vaulting he favored. The best form and most scientific is the double action as used by Graber. It should give a man a foot more height than the single action method. The double action and the single action are the same except that with the double action the movements are very distinct and with the other all of them flow into a single movement. With your double movement you get a definite swing, a stop and then a definite shoot. If you have a natural single action vaulter, do not try to change him. Most single action men have speed such as is the case of Barnes and Hoff. Their form is distinctly single.

The vaulter runs down the runway carrying the pole. As the pole hits the left foot is being planted (right handed vaulter) and the left hand slides up as the pole swings up above the head.

In theory when a man takes off he should be perpendicular or hang from pole like a plumb line from hands to left foot. A right footed vaulter takes off on his left foot, the right foot comes up and then the left foot goes past the right. If a man gets off balance or "side swipes" this can usually be corrected by having him accent the left leg kick. The run should be straight but the take-off slightly to the left of the box. A good vaulter should land straight ahead of the point they take off from. If they do not something is wrong.

Coach Comstock said that personally he did not believe in the "jack knife". Most all men get it in at the wrong time and it ruins what might otherwise be a good vault. The left foot kick is very important as it gives height. He had been watching the pole vaulters since 1901 and hadn't seen any vaulter that had all of the essentials that make for good vaulting. Many times men manage to correct a bad balance by adding a faulty action or position of the hands.

In checking the vaulting form of a man, start at the landin the pit and work back, checking each part, watching one poine at a time from front, rear and side. The run, take-off, arm action and

position are all important. The take-off must be just at the right time. Barnes had a particularly good run and swing up. When at his best Barnes had nearly perfect form.

As with every other event in track, good timing is necessary. The timing in an event does not depend on the timing of the whole but upon some certain action in the event. Many vaulters try to use too much speed and lose their timing. Graber had been able to clear 13' 9" and looked like he had two feet to spare with a moderate run. At times he has lost his step, then taken three strides and still gone over 13' 9" with very little speed.

As the run is finished and you shoot your pole and raise it above your head, bring the hands together by bringing lower up to upper. The right foot goes up with a kick. Next you do your pull up. If pull up is too fast you get your height on the pole before you get to the bar. If too slow, your feet hit the bar. This must be well timed. Most of the vaulters swing three-fourths of the way up. The whole action must be relaxed. This is the resting part of vault, the swing up. Being able to relax is the greatest asset any track man can have.

Discussing planting of pole, Coach Comstock said Sturdy of Yale used the underhand swing. Many vaulters using this method allow it to pull the arms out straight so that when their arms above their heads they have no bend at the elbow and cannot make a good pull up. This bend at the elbows must be maintained. For this reason he prefers the overhand swing in shooting pole. Yale teaches the underhand shoot but the other always seems to time more perfectly. (Coach Comstock formerly coached at Yale.) There is a lot of room for common sense in track coaching. "Many times we coaches think we have a sure fire method and we keep trying to put it into practice at any expense." While this particular thing might have worked with one man, it doesn't fit with the others.

In the swing up, hold the forward position of body as long as you can. Don't make the turn until at the end of the pull. Then kick legs to opposite sides and make turn over. The leg kick is a sort of scissors.

Teach new men to vault from standing position then one, two and three strides, trying more for distance. If they do not seem to get a pull it is because they do not get in a position to make the pull. As a rule their hands get too far away from them to make a good pull. The feet should not be together when the swing is made. Never plant the pole before you set your left foot on take-off.

A small man must hold the pole below the bar. Barnes held two and a half feet below. Small men must depend on speed to get them up. Hoff who was a large man held even with the bar. A big man has an advantage. There have been vaulters who have been known to hold three feet below the bar. Care must be taken that the last step before the vault is not too long. This fault is to be found in long legged men. They lose all their spring by this.

A vaulter should not work too much. Comstock has his club men lay off after Monday workouts when they are in shape. Discus throwers are only track athletes who cannot benefit by plenty of rest.

They seem to lose by taking a rest. When they are not so far along he has them work out Monday, do some good vaulting on Tuesday and then leave the vault alone until Saturday. If they wish they can play around, but there is no vaulting.

All the hard work should be done in the early season. Some individuals might stand harder work. When men rest they gain more in pep than they lose in endurance. After men are in shape in any event, outside the discus, they can go right along without any work but one meet each week.

You have to get acquainted with your men. Experiment with your men. If they produce, you are right; if not, you are wrong. However, the coach is more often right than the town fan.

Henry F. Schulte of the University of Nebraska:

He opened by telling that he had the pleasure of seeing Lundquist, the great Swedish thrower, do 232' 11". He threw five throws in one meet; all of them in a single line for 212' - 216' - 220' - 224' and 232'11". He used a quick run, a long pull and put his shoulder in before his arm. The body came first, then the shoulder and finally the arm. He finished up without any side twist but faced straight toward the line of flight.

Brutus Hamilton of the University of Kansas said the more he worked his javelin men the poorer they got. He had come to the point where he was about ready to ask the men how far they threw in high school then throw the javelin away and let them put in meets only.

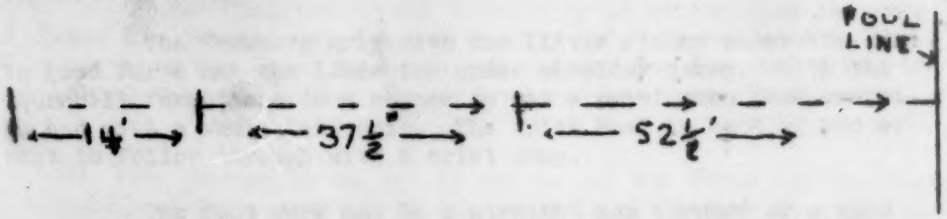
The problem as he saw it was to get the force applied directly along the javelin shaft. If the force is not direct it will cause it to go too high, too low or sail sidewise through the air. Most throwers will get a better javelin if they carry the point a little to the left as they bring it up. As they straighten out in the throw they pull it back to the center again and get a true javelin. In throwing, the Finns drop the left back and keep from having sore arms. An over arm instead of a side arm throw was less apt to injure the arm. The elbow should be bent as nature made it bend. Get a long pull on the javelin.

Ralph Young of Michigan State said he had heard Churchill say that the reason a lot of fellows got sore arms was that they did not know how to throw. Like the sore arm in the shot caused by throwing away from the body. Churchill had noticed in his throws always watched the tail of javelin to see that it was at the right angle instead of the point.

Coach Hamilton said there were four ways to hold it. (1): With a full hand. (2). With two fingers. (3). With three fingers. (4). Between the index and second finger.

The index finger is usually hooked behind the first cord of the grip. The throwing fingers are the index and thumb. Just the points of fingers are used. He liked to have a man start back about 52 feet with checks at 37 feet and 14 feet. The throw should be as close to board as possible without fouling. The throwing arm is drawn back to throw as the second check mark is hit during the run. In the throw, pull the left arm down and draw left shoulder back first, then pull first with the right shoulder and snap with the arm. Bend the arm very little. Bring the shoulder down and back as the cast is started and finish with the arm at a side angle so that elbow is not snapped beyond its natural straightening position. The pivot is made on the left foot and a drive comes with the straightening of the right foot and leg. The right hip is shoved up and forward as the throw is started forward. Don't turn to the side while making the run but carry the javelin by a slight hip twist. In throwing let go of the shaft as soon as whole body has been put into the throw. Don't hang on too long as this pulls the javelin down.

Kenneth Churchill of the University of California, who threw the javelin 226' 1 3/4" on an extra try in a dual meet with Stanford and only two weeks before won the I.C.A.A.A.A. with a record throw of 220' 11 3/4", was next to talk on the event. Churchill said he always picked a javelin with a good, solid, heavy cord. He gripped the javelin just back of cord with index finger and thumb. His second finger he held close to and ahead of index finger as a sort of support. The other two would help guide and balance but would not be used in making the throw to any degree. Only the tips of finger and thumb are used in gripping the shaft. The javelin will lie in the curve of the hand. He uses three check marks as in diagram.



Run easy and loose. Be sure to hit the first mark. Carry the javelin above the shoulder until the second mark is hit. One-third way to next mark the javelin is brought down. As he drops the javelin he turns but only from the hips up. As the throw is started his body is ahead and the first action is to drop the left shoulder. This pulls the right shoulder up and the arm comes over but does not bend much. The throw comes from the shoulder. As the throw is made a pivot is made from the ball of the left foot. As you throw the javelin the elbow goes out to the right. On the hop which is from 3 to 5 feet stay as close to the ground as possible. Shove straight up on toes of left foot. The last thing is the wrist snap which comes as it is extended above the head. The pivot is used to check him from going over the foul line. The right hip comes up with a snap as the right shoulder comes up to throw.

In making the run a man should bring javelin down soon enough to be relaxed before throwing. When you are letting go of javelin you must be traveling ahead in a straight line all the time. Let go of it the instant all the force has been applied. If you hold on too long it will do a nose dive. The only time his arm is straight is at the beginning and finish of throw. Churchill said he prefers the Finnish javelin because its weight was a little to the front. However, it breaks easier than the others. He liked a high topped shoe or a baseball shoe. He thought it harder to throw from a soft turf. Most of his throws were a little to the left.

Frank Anderson of Texas A. & M. College took up further work in the javelin. He said he was learning a lot of new things and confirming some old beliefs. They had used the Churchill form at Texas A. & M. for five years. Sore arms will not be developed by the overhand throw although men can be over worked. He liked to see the shaft held with index finger and thumb with other fingers used to point javelin slightly to left so as to even up the tendency to point to the right when throwing.

When the javelin is thrown the arm, shoulder and point of javelin should move in a straight line.

Tail drag is the most common fault. This is caused by holding on too long, pointing too high or using a javelin with too heavy a tail. There should be as much weight as possible toward the point of the javelin. Take a heavy stick and scrape down the tail to get such a javelin.

Don't point a javelin too high. Better to be flat than too high. If a javelin is thrown through a paper it should make a hold and not a slit.

The Yerkberg grip with the little finger under the grip is good for a man who likes the under shoulder carry. With the Churchill form there is a chance to get a wrist snap that cannot be had with a whole hand grip. The wrist must be back if you expect to follow through with a wrist snap.

The foot work may be a straight hop forward or a side twist hop.

HAMMER THROW

Dr. Castleman of Ohio State University:

The hammer throw is a dangerous event but one that can take a lot of work in the way of coaching. Most coaches do not like the hammer throw because it is hard to find a place that is safe to work in. But as long as this is a regular Olympic event it is worth working with. Personally, Dr. Castleman said he had a lot of enthusiasm for the event. About 90% of the coaches in America know little about the event so do not push it.

There are two methods of throwing, the high throw or turn and the low turn. One habit that should first be built by an athlete in this event is to stop and look around before each throw is made. Always have plenty of No. 36 piano wire for handles. With the big tall man it is best that he use the low turn. Short men use the high turn better. Have men use the single grip method if possible. With this the left hand is gloved and is underneath and the right comes through from the opposite side and over the left hand. Start the throw with arms at full length, the hammer behind if using the low turn.

Start with feet close to circle, left foot back just a bit with feet slightly at right angles. Whirl hammer three preliminary times above the head. Raise right leg and throw knee into left leg. Right foot alights directly behind where it was. Left foot comes back. Feet are about 16 inches apart at start. The pivot is made on the left foot. Gain speed gradual with the hammer as in the discus. Don't let the hammer get ahead of you on the pivot. The hammer should whirl around as near parallel to the ground as possible. As you start the turn, your weight comes on the ball of the left foot.

In making your release, get a pull from your right hip up to arms length, arms following same path. Best men are the ones who gain speed with each turn. Most common fault is allowing hammer to get ahead of the thrower.

The best shoe to use is a baseball shoe with a single spike in the tow of left shoe, using an ordinary baseball shoe on the right foot. The Yale school hammer throwers use no spikes but this makes it necessary to have very smooth ground to throw from.

The best men now make three turns. In your preliminary turn don't pivot on heel of left foot or on side of foot. Some men practice with a 12-pound hammer to build speed and improve form. In starting the turns, the body settles slightly with a dip. You can't perform well with a rigid pair of legs.

Ralph Young of Michigan State asked if football slowed up a hammer man. Dr. Castleman said he did not think football did but that injuries received in the game might do so.

"Dad" Butler remarked that the Notre Dame World's Record Relay team had three football backfield men on it. He thought that perhaps basketball might slow them some but football would not, barring the possibility of injuries.

DISCUS

E. C. Edmundson, University of Washington:

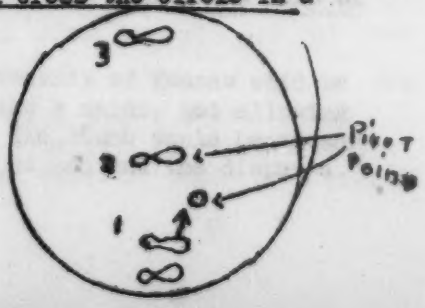
The first thing to teach a boginner is how to make a discus spin. The reason the spin is important is that a spinning discus will always stay level and keep in its glide. A man with a large hand has an advantage over the man with a smaller one. In grasping the discus the hand should be well spread with as little of the fingers as possible folded over the edges. The hand must be partially relaxed. The discus is thrown clockwise off the index finger. The new man should do a lot of easy throws, trying to get a good spin but never seeing how far he can throw. It is a harder event to learn than the shot. Dancing is good for clumsy discus men as they can learn co-ordination and balance which they must have to be a good performer.

Let the beginner stand and swing the discus a lot in the plane which it will be thrown. In throwing the discus should leave the hand at arms length when it is just opposite the right shoulder. A beginner should not worry about height or distance of throw. For that reason throwing into a net or canvas indoors is fine practice. Here a man can only work on form and not try for distance. Have a ring and make him work in it. Don't allow a man to throw at a 45 degree elevation. It must be thrown at a lower angle than the shot. In making a throw from the back of the circle, stand relaxed and swing the discus back and forth in the plane in which you expect to throw. This centrifugal force helps to keep the discus solidly in your hand. Make your backward swing fairly long. When you throw don't start too rapidly. As the discus is brought back for the throw start the arm first and follow with the shoulder and trunk twist. Pivot on the right foot which is a little back of the center of the circle. At the end of the pivot the arm should be back far enough that the muscles feel tight across the chest. As the final whip is made the thrower should jump up facing forward. To insure this have them watch the discus sail into the air.

Jessup, the world's record holder from Washington, threw the discus 126 feet in high school, 132 feet as a freshman, his sophomore year he had trouble staying in the circle and only did 130, his junior year his best throw was 155 feet 10 inches and as a senior he got 160. In practice he has done 170 feet. He is 6'7" tall.

If you have a good man who fouls a lot, let him take his qualifying throw from a standing position.

Relaxation is important at the beginning of the throw. The preliminary wind-up should not be high but behind and low. The swing should not be a wavy motion. Stand more or less flat footed. A beginner must not start too fast. He will cross the circle in a straight line, making pivots forward balls of the feet but not on the toes. Don't make the first step over twelve inches and keep as low as possible. The thrower should be sure the body balance is well over both feet before he starts his throw from the back of ring.



Watch a beginner from close behind the circle so as to see what he does with his feet. Later go out in front at a distance. From this position the coach is able to see the discus when he has it behind him and know that it is brought back far enough to get a good arm drive. The discus is sometimes laid on the back by twisting the wrist. This is an old form which "Heck" doesn't coach but does not object to it.

Coach Castleman of Ohio State said he rather liked this form as it made the wrist more flexible.

Coach Edmundson said the arm drive and whip at the end of the throw was as important as the spin. In holding the discus the hand is cocked some at the wrist.

The wind affects the throw of a discus a great deal. If you are throwing into the wind, throw low; with it, try to get higher. If the wind is at a cross angle, raise the side of the discus that is into the wind as in diagram.

At one meet a boy told "Heck" he would not throw because of the wind. He threw and did ten feet better than he had ever done in his life because his style was just right for the wind to help the sail of the discus.

In making a throw always keep the weight over the pivoting foot. Have an easy squat at start but the torso should be kept a little straighter than in the "drop" in the shot. After the pull is started the discus should always be in the same plane.

Coach Castleman said that a 30 degree angle was about right with wind facing you and 37 degrees when throwing with it. The discus should be in front of the point of the shoulder.

Coach Young of Michigan State asked if the discus should be seen over the top as it leaves the hand. "Heck" said this would vary according to the "stuff" the thrower put on it to take care of windage.

The pivots are two separate motions made in rhythm. Any motion made in pivoting should be a motion of the legs but not an up and down movement of the body.

Coach Castleman said that at Ohio, Drake and Iowa, the discus men use a shoe with only one spike in the toe and heel of left foot. The right shoe is just like any ordinary field shoe. On a muddy day the ordinary shoe is better. When throwing, one foot should always be on the ground. The movement to a pivot is not a jump but more of a "dance step".

Coach Brutus Hamilton of the University of Kansas said he liked the quick hop turn. Hold the hand like a talon, not allowing the discus to touch the palm of the hand. The thumb would be closer to the fingers than is the practice with most men and the discus a

trifle in front of the hand. This allows for more wrist in the throw and a little more power. Drive from the start on the right foot and make a hop turn. He liked fast start. With high school boys a slow start would be better. A man needs a lot of throws without the turns or reverse. His men all went in a straight line across the ring. He closed with the idea that a lot of practice was the big thing in the discus.

Coach Hunter of the Olympic Club asked what "Heck" thought of the fast start. Coach Edmundson said he always had been against a fast start as it threw most men off balance.

Bob Jones of Stanford next took up the event. He went to Stanford as a high jumper. They made a discus man out of him. His best throw to date had been 159' 2".

The turn and the delivery are the two most important factors. The delivery is the first thing to develop. This is done by stepping into a standing throw. A turn sometimes used is the "delivery groove" or plane in which the discus travels from the start at the back until it leaves the hand in front. You must get the body behind the throw which starts at a 90 degree angle to the direction the discus will finally go. As throw is made the discus should be about shoulder high. In the standing throw the hips drop around until you face to right angles to the front position. Straighten out the hips as the arm comes around to throw. Don't look where you are to throw when in front of circle. Look straight ahead. Swing the left arm back as you throw. If discus is started too low it will go too high and if started too high it will be thrown over the shoulder and go quickly to the ground.

In holding the discus, cup the hand relaxed so the edge touches the wrist. The fingers should be just over the edge so when it is thrown the discus leaves off the first finger.

When getting ready in back of circle stand with right foot back, feet together and swing the discus to get relaxed, facing at a right angle to director of throw. Have most of weight over the right foot. The crouch is made by dropping the body low with the shoulders held "in". From the crouch start the turn forward before the drive from the leg is started. You make your turn with your legs only, your body "rides" above the hips. The legs do all the work. As the pivot begins the weight goes to the left foot and ahead of it. In the first pivot the drive and hop are combined. You are off the ground with both feet at the same time. The first pivot must be far enough around that the foot and leg are in the direction of the throw. After the drive hop you land on the right foot in the same position that you start in. From there on it is the standing throw movement. Nothing above the hips moves until you start the actual throw. Let the legs do the work.

Coach Duke of Grinnell asked Jones to explain his reverse. He said the reverse at finish saves space and gives you balance. The turn gives momentun. The left arm should be in front of the body.

Discus men should work every day even the day before a meet. Snap not necessary as in the shot. Coordination is

trifle in front of the hand. This allows for more wrist in the throw and a little more power. Drive from the start on the right foot and make a hop turn. He liked fast start. With high school boys a slow start would be better. A man needs a lot of throws without the turns or reverse. His men all went in a straight line across the ring. He closed with the idea that a lot of practice was the big thing in the discus.

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the thing and only practice will keep this. The more firmly the feet are planted the more force possible. The final throw is with a drive off right leg but the other foot must be planted solidly. In the reverse the feet change places to keep you from fouling.

Jones said he used a sprinting shoe. He carries the discus at the side all the time, while Krenz gives it a swinging motion away from the body. The Krenz way might be better butit was hard to do. A man must settle or gather a bit before making the throw. He said Krenz had also said he always wanted to feel that he had settled. Keep the turn as low as possible. In making the hop don't bend the knees but raise the hips in the air. Short men get lower with more drive but tall men get a longer swing.

A discus man needs strong belly muscles. Sitting up exercises are good to develop these. Field event men should work the year round. They have to have fun with their work to keep up enthusiasm. Put variety into workouts.

PICK-UPS IN GERMANY

At the time of this track conference I promised to bring back and incorporate in these notes such ideas as I found in my work in Germany, etc. Here they are, as concise as possible:

The German runner follows a more distinct style or form than does our runner. Here we permit a great variation of style or form. We allow a man to run as is natural for him.

The German runner in arm action is quite similar to ours--arms possibly a bit higher than our average but swinging toward the medial line of the body. His leg action, both front and rear, is decided in style, however. The rear leg is fully extended in the drive forward--in some cases the knee almost clicks as it is straightened. That same action occurs in the forward leg placing,--the knee is very straight as the foot is planted.

The straight leg, both rear and front, is distinctly characteristic of most of the German runners. The coaches advocate it.

The German athletic coaches are accustomed to much scientific investigation and inspection. Sometimes this may run to extremes to be sure, but nevertheless some interesting facts are discovered.

High jumpers often have trouble with torn tissue at the top and top sides of the take-off ankle. The Germans have taken hundreds of X-rays of such injuries and find that though not so painful these injuries seriously hamper development. They report that the percentage of injuries is much greater among front jumpers than roll jumpers. The medical authorities advocate therefore that the roll jump be coached wherever possible.

In the javelin many X-rays have proved to the medical men that the inner edge of the elbow shows tears in almost every disabled javelin man. Their suggestion to minimize the chance of injury is to grip the javelin between the first and second fingers instead of between thumb and fingers. The coaches, at least several of them, scoff at the idea and say that no good thrower ever has used that grip.

The medical men make a second suggestion: If the generally used thumb and fingers grip is used, the elbow can be saved by an early forward swing of the elbow, that is, before the arm is extended. The elbow is pulled forward over the shoulder (not to the side) and then the arm extension follows. The latter action is quite similar to that in use and advocated by Churchill.

I might well say finis right here. I have covered the new stuff I got. However, I can't help but remark that the German competitor has one queer spot in him. He is not a strong fighting, a

bitter finisher in competition. Again and again I saw races in which men entering the stretch were passed up without a struggle. The man being passed up would hold his form and show evidence of considerable reserve but would never call upon it. At first glance it might be inferred that the German runners lacked the fighting heart--the thoroughbred instinct. I hardly acquiesce in that opinion.

The German competitor still contests as did the German of Turnverein days when form or style was the whole answer. The Turner or gymnast had only one idea--the perfection of his action. The modern German track competitor contests in the same fashion now. If he holds his form--retains his style to the finish--he has done a good job. Head Coach Waitzer when this comment was made to him agreed and said, "Wait until we learn to compete, until we acquire the thoroughbred's viewpoint, then you'll see the German young man come into his own".

SHOT PUT

"Heck" Edmundson of the University of Washington:

The power in shot once applied should be in a continued straight line. The hand should follow a straight line from beginning to end in the same line that the shot is to go. Don't twist the shoulder or reverse the direction when dropping down for the start in the back of the circle. As the putter crosses the circle he "skims" the ground but does not hop. Always start at the very back of the circle. Rest the shot on the shoulder. Don't bounce or swing the shot around when getting ready to put. The shot should be held well back on the hand at the base of the fingers with the thumb and little finger under the shot.

Standing at the back of the circle, the left arm is bent at the elbow and relaxed in a position to be whipped back. The arm should be held up at about the angle that you expect to put the shot. Swing the left foot so that right should may be straight back. Don't swing the leg in a circle. In crossing the circle take less than half the circle in the first glide. This should be a glide close to the ground instead of a hop.

At the end of the glide to center of circle the shot should be on a perpendicular plane with the hips and the back foot. The front leg should be bent. The hand is on the shot when the arm is extended but the reverse has not yet started. As the shot is released the fingers are above the shot. The hand should be against the shot as long as possible. The reverse comes only after the shot has been put and is merely a follow-up movement. In watching a shot putter, study him from all sides but do not make criticisms too fast. In your put be sure to start low and stay with the shot just as long as possible. The longer you put power on an object the more speed you obtain. When pushing a car from a standstill it starts very slowly and gains speed as long as the pressure is applied. This principle is true in the shot. You must use a lot of leg drive to put well. Start the arm, leg and body at the same time.

Speaking of the movement at the back of the circle, Coach Edmundson said that each time the left leg was swung the toe should touch the ground. This would prevent the man from using this leg as a pendulum and throw themselves off balance at the start. The glide across should be fairly fast but the recoil before the put was the important thing. The right foot comes to its driving position at the end of the first glide. No twisting around when you put. When the final drive is started the right foot is flat on the ground. The left leg is a balance. Brix once said that he thought ht was in the position of a boxer in the putting position as regards his stance. It is impossible for a putter to get his shoulder low if his legs are not spread pretty well.

Coach Edmundson said he liked to do early season work with a 50-pound dumb bell. This developed the back and shoulder. Should use both arms. A 22-pound shot is used some, but all this in early season only.

This diagram was put on the blackboard to give the positions of the feet. In crossing to the middle of the circle the putter gets his right foot in firm contact with the ground a very small fraction of a second ahead of his left foot.

Coach Edmundson went over the starting position again. The shot is rested on either neck or shoulder. Never take the shot from the shoulder while crossing the circle. At the time of the "set" for delivery the forearm, upper arm, elbow and left arm should all be in the same plane--all of them in nearly the line of the throw. The body should be well down with the shot resting directly over the right foot. The lower down the more leverage the man has. At the finish both shoulders are to the front. Care must be taken not to allow the left arm to be thrown behind the body.

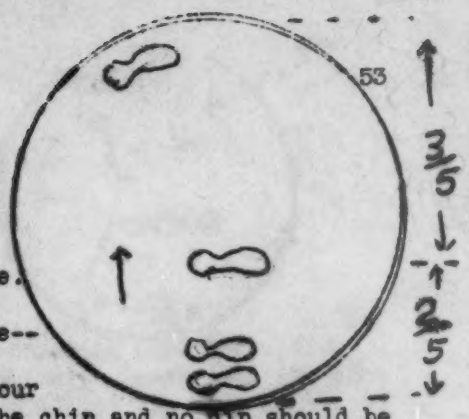
The loose-muscled man has an advantage in the shot over the rugged fellow. Don't let elbow of the right arm get too low, but never get it above the line through shoulders and left arm.

Coach Bresnahan of the University of Iowa said he thought many shot putters made the mistake of keeping the elbow too low.

Coach Schulte of the University of Nebraska was asked to give his ideas as to the correct form in the event. He said it was his opinion that in putting the back shoulder should be dropped but not drawn back. The back hip should be well ahead of the back foot so as to give the maximum power. More of the weight should be on the left foot. The shoulder should be low but square. Too many men do not use the most powerful part of the body, the lower torso, taking in the muscles between shoulders and hips. Herschfeldt of Germany gets his added power in his puts. In putting the most powerful part of the body should go into action first, followed by the quicker members. The torso whips across first, followed almost at the same time by the leg drive then speedier shoulder, arms and fingers. The shot leaves the hand just as the right foot leaves the ground. The reverse is only a follow-through--not a part of the put. Mr. Schulte repeated that he wanted to drive this last part home--that the foot reverse was not a part of the put but a recovery action designed to help a man stay in the circle. The shoulder reverse is a part of the put.

A lot of men allow the shot to get out to the side away from the body and as a result do not get all the power behind the shot. The shoulder rocks straight forward instead of twising.

Coach Schulte said he thought that nine out of ten men put too high. Most try for near a 45-degree angle of elevation when about 33 or 34 degrees would be better. At the higher angle the body cannot stay behind the shot as long as with the lower angle.



At the back of the circle the man must be relaxed and free. Start across circle easy. The first glide will bring back foot to a point 3/5 of the way back from the front of the circle. Put with the powerful part of the body first. Drive the shot just past the nose--just grazing the side of the face. This will put you back of the shot with all your power. The shot should not pass below the chin and no dip should be used as is the practice with many men. Don't start too fast in the back of the circle but put on the speed at the final explosion. Herschfeldt drives straight ahead in a shuffle or drag without a reverse, getting a maximum drive off toes. His shot always fell in the same line, straight ahead and a little to the left. The left arm goes down at the finish back only very slightly. The best rule is to let the man take the most natural position with the left arm. You cannot apply the same rules of mechanics to every boy. All have individual peculiarities. Rose always used all of his fingers behind the shot in putting.

A good plan to follow in working a 45-foot man is to have him put about 38 or 40 feet ten times on three days a week. Never let him extend himself over once a week. A good rule is, work much in moderation. A new man will do his best distance the first week, he will then drop down for two or three weeks. Do most of early work from the front of the circle.

In answer to a question, Coach Schulte said the front foot as the step is taken should be six or seven inches back of the toeboard, as this gives a longer pull.

Coach Edmundson said he liked to see a man have his fingers back with the thumb holding the shot. The fingers of a good man need to be powerful. Most men like a 16-pound bronze shot as it seems to fit best in the hand. Brix uses the push-up exercise to strengthen his fingers, using them instead of his arms.

Coach Schulte suggested the exercises of stand off from the wall and dropping against it with fingers extended and also the squeezing of a sponge rubber ball for finger development.

Coach Edmundson closed by saying he thought the discus cut down a shot putter's distance to some small degree.